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LAW OFFICE OF RICHARD A. DUNNING, JR.
343 SOQUEL AVENUE
SUITE 311
SANTA CRUZ, CA 95062

EXAMINER	
NEWLIN, TIMOTHY R	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/008,613
Filing Date: November 08, 2001
Appellant(s): PIERCE ET AL.

Richard A. Dunning, Jr.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/28/2010 appealing from the Office action mailed 12/7/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

Claims 1-59 are pending and rejected.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner.

New Grounds of Rejection

For purposes of appeal, the rejections of claims 10-12, 29-31, and 46-48 have been changed from relying on official notice to citing specific prior art. See below in paras. 21-23 of Section (9), Grounds of Rejection.

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,006,097	Hornfeldt et. al	12-2009
6,028,537	Suman et. al	2-2000
2002/0021187	Stenberg	2-2002
5,510801	Englebrecht et al.	4-1996

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hornfeldt et al., US 6,006,097 in view of Suman et al., US 6,028,537, and further in view of Stenberg, US 2002/0021187 and Engelbrecht et al, US 5,510,801.

3. Regarding claims 1, 13, 19, 32, 37, and 49, Hornfeldt discloses a method comprising:

accessing a location of the device, the location determined from pseudo-ranges between the device and a plurality of transmitters, the pseudo- ranges calculated from broadcast signals received by the device from the transmitters **[Figs. 2, 3 and 6, cols. 4-6, 45-3; col. 7, 17-39]**.

Hornfeldt does not teach providing a service at the location of the device. Suman does disclose providing a physical service at the location of a device **[e.g. providing**

roadside assistance, col. 15, 55-63; locking/unlocking doors or rolling up windows, cols. 15-16, 66-8, col. 49, 49-56]. These services are provided based on the location of a mobile device, which is determined using a navigation module such as a GPS **[cols. 9-10, 65-4; col. 11, 8-13]**. Suman also utilizes a cellular network having a plurality of base stations **[col. 6, 4-9]**. Although they are not used for positioning per se, the base stations are described as transmitting and receiving signals to the mobile device. Thus it would have been obvious to one of ordinary skill that the positioning function of Hornfeldt could be used to provide location based services as disclosed in Suman, using terrestrial, cellular base stations rather than a more costly GPS unit.

Neither Hornfeldt nor Suman teach the use of DTV signals. However, as described in Stenberg, DTV transmission was being added to existing antenna towers at the time of invention, in part to comply with federal mandates without building additional towers **[paras. 3-4]**. Since DTV signals were available in the same configuration as cell towers (e.g. multiple terrestrial locations), it would have been obvious to one skilled in the art of RF communications that DTV signals could be used to perform position triangulation as disclosed by Hornfeldt. Merely using a new signal type in order to perform the same function does not yield unpredictable results, but rather would be readily predicted given the disclosure of Hornfeldt. Furthermore, at the time of invention there was knowledge in the art that TV signals could be effectively used to calculate position. Englebrecht, for example, gives several benefits of using television signals for this purpose **[col. 1]**.

With respect to claim 37, the Suman teaches a system wherein the means for determining the location are incorporated into the device **[GPS module 38, Fig. 3]**.

Hornfeldt does use the time difference between transmission and reception of a signal, but does not rely on a clock offset since the system measures a return delay. Engelbrecht teaches the use of a clock offset in a television signal positioning system to calculate the location of a receiver **[col. 3, 44-62; cols. 2-3, ll. 56-3; col. 4, 53-62; col. 5, 59-65]**. Given the parallel objective of Hornfeldt and Engelbrecht to calculate receiver position from remote transmissions, it would have been obvious to one of ordinary skill that position may be calculated from a single delay instead of round trip, provided a clock offset is used to prevent drift as taught in Engelbrecht.

4. Regarding claims 2 and 50, Suman discloses a method wherein the physical service comprises emergency roadside assistance **[col. 15, 55-63]**.

5. Regarding claims 3, 51, and 52, Suman discloses a method wherein the physical service comprises an E-911 service **[cols. 12-13, 51-31]**.

6. Regarding claims 4, 33, 43, and 55, Suman discloses a method wherein the device is located in one of a plurality of geographic domains and a quality of the physical service depends on which geographic domain the device is located **[cols. 14-15, 48-6; col. 33, 23-47]**.

7. Regarding claims 5, 16, and 34, Suman discloses a method wherein the device is a stationary device **[e.g., some services are specifically directed towards a parked, i.e. stationary vehicle, col. 49, 9-56]**.

8. Regarding claim 6, Suman discloses a method wherein providing the physical service comprises performing the physical service at the location **[e.g., ambulance performs emergency first aid at accident scene, col. 13, 19-31; tow operator arrives at scene of breakdown, col. 15, 55-63]**.

9. Regarding claims 7, 24, 41, and 53, Suman discloses a method wherein providing the physical service comprises: transmitting a key code to the device, the key code authorizing provision of the physical service at the location **[e.g., a flag may be transmitted to the mobile device, authorizing (or prohibiting) certain physical services such as automatic door locking, Fig. 49A, col. 44, 49-62]**.

10. Regarding claims 8, 25, 42, and 54, Suman discloses a method wherein providing the physical service comprises contacting a local service provider of the physical service and authorizing the local service provider to provide the physical service at the location **[the system may summon a local tow truck by contacting a nearby central service center and requesting (i.e. authorizing) roadside assistance, col. 13, 32-44]**.

11. Regarding claims 9 and 26, Suman discloses a method wherein the device is located in one of a plurality of geographic domains and the local service provider depends on in which geographic domain the device is located **[col. 13, 32-44; in the case of a stolen vehicle, police in the current vicinity of the vehicle can provide recovery, cols. 13-14, 65-6]**.

12. Regarding claims 14, 15, 18, 36, and 57, Suman discloses a method wherein providing the service comprises providing information according to the location of the device **[col. 14, 48-63, col. 33, 4-48]**. With respect to claims 36 and 57, the information is provided on the integrated device display **[e.g. display 619, Fig. 42]**

13. Regarding claims 17 and 35, Suman discloses a method wherein the service is provided to a party other than a user of the device **[other parties may include the police or a friend or family member, cols. 13-14, 55-21]**.

14. Regarding claims 20 and 38, Hornfeldt discloses a method wherein accessing the location of the device comprises the device receiving the location from a location server **[service node 102 acts as a server, transmitting location data to the requester, Figs. 2 and 3, col. 4, 32-65]**. The DTV portion has been addressed above in the rejection of claim 1.

15. Regarding claims 21 and 39, Suman discloses a method wherein providing the service comprises a service provider system providing the service **[col. 36, 25-28]**.

16. Regarding claims 22, 23, and 40, Suman discloses a method wherein accessing the location of the device comprises the service provider system receiving the location from the device **[e.g., col. 13, 55-65]**. The server language is addressed in connection with claim 20 above, and the DTV signal is addressed in the rejection of claim 1 above.

17. Regarding claims 27 and 44, Suman discloses a method wherein provision of the service occurs automatically without an explicit request by a user of the device **[col. 13, 27-31, col. 49, 49-62]**.

18. Regarding claims 28 and 45, Suman discloses a method further comprising: receiving a request for the service and providing the service only in response to such a request **[col. 14, 48-60]**.

19. Regarding claim 56, Hornfeldt discloses a system for providing a service based on a location of a device, the system comprising:

a device for receiving broadcast DTV signals from a plurality of DTV transmitters and calculating pseudo-ranges from the received DTV signals **[Figs. 2, 3 and 6, cols. 4-6, 45-3; col. 7, 17-39]**.

a location server for determining a location of the device from the pseudo-ranges **[service node 102 acts as a server, transmitting location data to the requester, Figs. 2 and 3, col. 4, 32-65]**; and

Hornfeldt does not teach providing a service at the location of the device. Suman does disclose a service provider providing a service according to the location of a device **[e.g. providing roadside assistance, col. 15, 55-63; locking/unlocking doors or rolling up windows, cols. 15-16, 66-8, col. 49, 49-56]**. These services are provided based on the location of a mobile device, which is determined using a navigation module such as a GPS **[cols. 9-10, 65-4; col. 11, 8-13]**. Suman also utilizes a cellular network having a plurality of base stations **[col. 6, 4-9]**. Although they are not used for positioning per se, the base stations are described as transmitting and receiving signals to the mobile device. Thus it would have been obvious to one of ordinary skill that the positioning function of Hornfeldt could be used to provide location based services as disclosed in Suman, using terrestrial, cellular base stations rather than a more costly GPS unit.

Neither Hornfeldt nor Suman teach the use of DTV signals. However, as described in Stenberg, DTV transmission was being added to existing antenna towers at the time of invention, in part to comply with federal mandates without building additional towers **[paras. 3-4]**. Since DTV signals were available in the same configuration as cell towers (e.g. multiple terrestrial locations), it would have been obvious to one skilled in the art of RF communications that DTV signals could be used to perform position triangulation as disclosed by Hornfeldt. Merely using a new signal

type in order to perform the same function does not yield unpredictable results, but rather would be readily predicted given the disclosure of Hornfeldt. Furthermore, at the time of invention there was knowledge in the art that TV signals could be effectively used to calculate position. Englebrecht, for example, gives several benefits of using television signals for this purpose **[col. 1]**.

With respect to claim 37, the Suman teaches a system wherein the means for determining the location are incorporated into the device **[GPS module 38, Fig. 3]**.

Hornfeldt does use the time difference between transmission and reception of a signal, but does not rely on a clock offset since the system measures a return delay. Engelbrecht teaches the use of a clock offset in a television signal positioning system to calculate the location of a receiver **[cols. 2-3, ll. 56-3; col. 4, 53-62; col. 5, 59-65]**. Given the parallel objective of Hornfeldt and Engelbrecht to calculate receiver position from remote transmissions, it would have been obvious to one of ordinary skill that position may be calculated from a single delay instead of round trip, provided a clock offset is used to prevent drift as taught in Engelbrecht.

20. Regarding claims 58 and 59, Hornfeldt discloses a method wherein the device serves as the location server by determining the location from the pseudo-ranges, and the device serves as the service provider system by providing the service **[device itself can provide the location to, e.g., an ambulance service, col. 13, 22-28]**. The DTV signal is addressed in the rejection of claim 1 above.

21. Claims 10, 29, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hornfeldt, Suman, Stenberg, and Engelbrecht as cited above, further in view of Brotz et al., US 6,374,404. Stenberg discloses DTV signals but not ATSC specifically. Brotz teaches a digital TV system using signals is ATSC format **[col. 5, 17-22]**. It would have been obvious to one of ordinary skill in the broadcasting field that the DTV signal disclosed in Stenberg could have been in ATSC format to provide compatibility with ATSC-compliant devices.

22. Claims 11, 30, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hornfeldt, Suman, Stenberg, and Engelbrecht as cited above, further in view of Lipsanen et al, US 2002/0059614. While the above references are silent on DVB-T standard, Lipsanen teaches that the DVB-T standard can be used in a DTV system. It would have been obvious to one of ordinary skill in the broadcasting field that the DTV signal disclosed in Stenberg could have been in DVB-T format in order to provide compatibility with DVB-T-compliant devices.

23. Claims 12, 31, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hornfeldt, Suman, Stenberg, and Engelbrecht as cited above, further

in view of Miura et al., US 6,483,848. Stenberg discloses DTV signals but not ISTB-T (i.e. integrated services digital broadcasting) specifically. Miura teaches that digital signals may be coded in the integrated services digital broadcasting format **[col. 1, 45-61]**. It would have been obvious to one skilled in the art at the time of inverntion that the DTV signals described in Stenberg could be formatted in the ISDB format in order to provide compatibility with ISDB-compliant devices.

(10) Response to Argument

Applicant initially asserts that none of the applied documents, by itself, discloses using digital television (DTV) signals for positioning. The rejections acknowledge this, and accordingly are based on §103 rather than §102. In summary:

- Hornfeldt teaches positioning using round-trip propagation delay (but is silent on *receiver device* clock offset);
- Engelbrecht teaches 1) positioning using analog television signals and 2) accounting for clock offset *between transmitters*;
- Stenberg teaches that analog stations such as those used in Engelbrecht can be modified to also transmit DTV signals;
- Suman teaches the provision of a location-based service.

The premise of the rejection is not that any reference by itself teaches a receiver device clock offset, but rather that it would have been obvious to one of ordinary skill

that the clock offset between two transmitters described in Engelbrecht would also exist between the receiver, and should be accounted for when determining position with a one-way propagation delay system such as Hornfeldt.

In Engelbrecht, each transmitting station sends a sync burst signal that is used by the processor as a timing reference signal, i.e. clock. The processor corrects for the frequency or timing offset of the sync signals between transmitting stations. Engelbrecht, col. 4, 2-29. This would suggest to one of ordinary skill that a clock offset of the device—i.e., the difference between a transmitter clock and the receiver device clock—should likewise be accounted for to calculate accurate range. In the context of the prior art (such as Hornfeldt) that uses one-way propagation delay, it would have been obvious that the device clock offset is the appropriate correction factor, rather than transmitter-to-transmitter offset. Combining the teachings in this way enables accurate position determination using only one-way, rather than two-way signaling. Among other benefits, such a change reduces the time required to calculate position (due to fewer signaling steps) and thereby increases accuracy.

Furthermore, the claim can reasonably be interpreted to read on Engelbrecht directly. The claim merely requires that a clock offset of the device be “represented" by the pseudo-range. There is no particular definition of the offset, nor is there a recitation of how the offset is used in the calculation—only that it somehow contributes to the result. Thus, clock offset could reasonably be taken to mean the time required for Engelbrecht’s receiver device to process the incoming signal and respond with an outbound transmission. This processing time contributes to (i.e. offsets) the total

propagation delay; therefore the pseudo-range resulting from the calculation at least "represents…a clock offset of the device."

Since the above arguments are believed to be sound, there is no reason to rely on the argument previously made by the Examiner (Final Rejection mailed 12/7/2009, p. 2) that the target receiver adopts the reference clock as its own. No such interpretation is necessary since the device clock offset is either obvious over or met directly by the cited prior art as explained above.

Examiner notes that new grounds of rejection are applied in paragraphs 21-23 of the Grounds of Rejection section above (claims 10-12, 29-31, and 46-48). The rejections were previously based on official notice and have not been challenged by the Appellant in the Appeal Brief or previous responses. For purposes of appeal, those rejections have been changed to cite prior art rather than official notice.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Timothy Newlin/

Timothy Newlin, Examiner, Art Unit 2424

Conferees:

/Christopher Kelley/

Supervisory Patent Examiner, Art Unit 2424

Chris Kelley, SPE, Art Unit 2424

/John Miller/

Supervisory Patent Examiner, Art Unit 2421

John Miller, SPE, Art Unit 2421